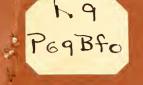
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FOREMAN'S MANUAL OF INSTRUCTION

WHITE-PINE BLISTER-RUST CONTROL REVISED APRIL, 1930.

CONCORD, N. H.



NEW HAMPSHIRE FORESTRY DEFARTMENT in Cooperation with UNITED STATES DEPARTMENT OF AGRICULTURE

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INTRODUCTION

ALL CREW FOREMEN AND SCOUTS, employed in Blister-Rust Control, are expected to read carefully the instructions and regulations contained in this manual. An attempt has been made to set forth all rules, field methods, uses of forms and records in a plain and easily understood manner. Detailed instruction has been eliminated from the manual in view of the fact that you will be given same by the County Blister-Rust Agent before taking up your duties.

If you are in doubt regarding any of the instructions contained in this manual, after having <u>carefully read them</u>, take the matter up as soon as possible with the Blister-Rust Agent under whom you are employed.

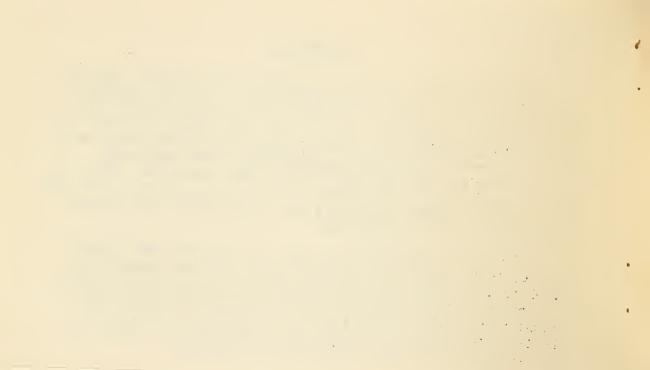
The Manual covers all phases of your work, except such special instructions as the Blister-Rust Agent may give you from time to time. READ THE MANUAL CAREFULLY and you will experience no trouble in your daily work.

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Important:

The State Agent, in charge of Blister-Rust Control, desires to call your attention to the importance of carefully handling your crew, so as to avoid criticism in the locality where you have been working. Incidents, which at the time seemed relatively small and unimportant may develop enough unfavorable public sentiment to prevent blister-rust appropriations from being made another year in that town where the incident occurred. Also, reports of poor work or misconduct on the part of a crew in one town may spread to nearby communities and cause them to vote against appropriations for control work.

The Foremen should bear in mind that they are held responsible, to the County Blister-Rust Agent, for work conducted in each town where they have been employed during the field season. A foreman should so handle his crew as to gain and hold their respect, and while he should exercise judgment, he should not hesitate to discharge any crew member whose work or conduct is apt to harm blister-rust control work in any way.



The State Agent reserves the right to cancel any of the instructions contained in this manual or to issue additional ones from time to time. However, inasmuch as your superior is the County Blister-Rust Agent, all changes in regulations or any new additions will be taken up with you by him.

FACTS ABOUT BLISTER RUST

- NAME OF THE FUNGUS: CRONARTIUM RIBICOLA (Someone may ask you this).

 It is pronounced Crow-nar-shum rye-bick-o-la.
- WHAT BLISTER RUST IS: Blister rust is a plant disease which is caused by the growth of a parasitic fungus within the inner bark of white pine trees, and within the leaf tissues of RIBES (Currant and gooseberry bushes) pronounced Rye-bees.

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THE HOST PLANTS: The host plants of blister rust are WHITE PINES and RIBES.

WHITE PINE: The blister-rust fungus attacks only those pines which have their leaves (needles) in clusters of five. The Eastern White Pine is the only five-needled pine native to the eastern United States. In the West there are two other native five-needled pines of commercial importance, the Western White Pine and the Sugar Pine.

RIBES: All species of Ribes are hosts of blister rust, although the cultivated black current is the most susceptible, and in many cases has been responsible for great damage to pine growth.

You may be asked, "How many kinds of currants and goose-berries are there in New Hampshire?" For your information the following list of the common species of Ribes found in New Hampshire is given:



Cultivated Ribes

Black Current (Ribes higrum)
Flowering Current or
Clove Bush (R. ödoratum)

Red Currant (R. vulgare)
White Currant (R. vulgare)
Cultivated Gooseberry (R. grossularia)

Wild Ribes

Black Currant (R. americanum)
Skunk Currant (R. glandulosum)
Prickly Currant (R. lacustre)
Red Currant (escaped) (R. vulgare)

Prickly Gooseberry (R. cynosbati)
*Swamp Red Currant (R. triste)
Smooth Gooseberry (R.hirtellum)

*Note: The Swamp Red Currant is not common in central and southern New Hampshire; it is more general in mountainous regions and the far north.

- ORIGIN OF BLISTER RUST: The blister rust probably originated in the Baltic Provinces of Russia, and spread from there into Europe. The disease was introduced into the United States on white-pine nursery stock imported principally from German and French nurseries. It was first discovered in North America at Geneva, N. Y. in 1906, on Ribes, and in 1909 on white pine.
- PRESENT DISTRIBUTION IN THE UNITED STATES: Blister rust has been found in every white-pine town in New Hampshire; it is present in all the other New England States, New York, Pennsylvania, New Jersey, Michigan, Wisconsin, Minnesota, Montana, Idaho, Washington, and Oregon.
- HOW BLISTER RUST SPREADS: The blister rust is transmitted by means of minute seed-like structures called SPORES, which are blown about by the wind or carried by currents of air. The blister rust has five different kinds of spores, only four of which function in the spread of the disease. These are:

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- 1. The <u>spring spores</u> (<u>aeciospores</u>), which are produced on diseased pines early in the spring, from about April 15, to June 15. These spores spread the blister rust to current and gooseberry leaves.
- 2. The <u>summer spores</u> (<u>urediniospores</u>) are produced on the under side of infected leaves of currants and gooseberries, beginning about June 15, in this State. These spores spread the disease only to other Ribes.
- 3. The <u>fall spores</u> (<u>teliospores</u>) are also produced on the under side of infected leaves of Ribes, beginning early in July. The function of these spores is to germinate and produce the pine-infecting spores.
- 4. The pine-infecting spores (sporidia) are produced by the teliospores on the under side of leaves of Ribes. The sporidia spread the blister rust to white pines.

DISTANCE OF SPREAD: Acciospores unquestionably travel many miles.

Recent evidence obtained in the West indicates a spread of at least 110 miles in one instance.

<u>Urediniospores</u> have been trapped as far as 3,200 feet from their source.

Teliospores generally remain on the Ribes leaves, as their function is merely to produce the sporidia.

Sporidia are effective in spreading the disease to pine only at distances of less than 900 feet under ordinary conditions. Sporidia produced on the leaves of the cultivated black currant, however, may spread the disease to pines as far as a mile away under favorable conditions.

- SPREAD OF BLISTER RUST IN NEW HAMPSHIRE! White pines, infected by blister rust, have been found in practically every woodlot so far examined. Studies made of infected areas throughout the State indicate that from 15% to as high as 94% of the pine are infected in many localities.
- HOW INFECTION TAKES PLACE: White pines are infected through the breathing pores of the needles, and in no other way.
- HOW BLISTER RUST CAN BE CONTROLLED: The fact that the disease cannot complete its development upon one plant, but requires two distinct hosts is the weak point in its life history. It is apparent, therefore, that if the two sets of host plants are separated widely enough, so that the spores produced upon one cannot reach the other, the disease cannot spread. Blister rust is controlled simply by eliminating the less valuable host plants, which in New Hampshire are the currant and gooseberry bushes.



ERADICATION OF VIID RIBES: Three methods are used:

- 1. Ground covered by crew in close or open formation.
- 2. Spot eradication by Advance Scouting.
- 3. Stone walls and fence work.

Method #1: In stripping a piece of land a foreman should use judgement in spacing his men. Space them 5 or 6 feet apart where Ribes are abundant and the underbrush thick, and 10 or 12 feet apart where Ribes are scattered and little underbrush present. The Foreman works behind his crew, zig-zagging back and forth, carefully checking their work.

Avoid Lost Motion In Your Crew. If half of the crew strike a large patch of Ribes, direct the other half to jump in and help pull, or to check back over the ground just covered. Before continuing have the Ribes patch checked over for missed bushes, and for exposed and broken roots. Checking is important.



Method #2: The Advance Scout is responsible to the Foreman and shall work under his direction. As the Scout seldom works with the crew, the Scout and the Foreman should at all times cooperate in a friendly spirit. Each man can be of great assistance to the other. They should get together each evening for a few minutes so that each may learn of the other's progress during the day, and plan the next day's work.

The Scout should plot on the Foreman's map the location of all areas requiring crew work which he has found during the day.

The Scout should advise the Foreman the approximate time the crew will require to clean up such areas.

The Scout will, if necessary, take the Foreman and crew to the areas where he has found crew work.

The Scout may be required to assist the Foreman in listing the names of owners of cultivated Ribes.



Method #3: Stone walls and fence rows require special attention, because:

- 1. It is often easy to miss Ribes in such places.
- 2. Ribes are frequently numerous there.
- 3. Ribes in such places may be extremely dangerous to white pine.

Regardless of where you are during working hours, see that no loafing occurs. Perform your work as carefully deep in the woods as you do along a public highway or near houses, where the public will see it. This is the best way of showing the public that blister-rust men mean business.



CHECKING: It is very necessary that crew-checks be made by the foreman as frequently as is consistent with efficiency.

Checking conducted by the State Inspector last season showed that in pastures and slash and brush the poorest work is performed. In pastures or other open types Ribes are likely to be scattered, and consequently, crews are apt to become careless. Where slash or brush is present poor work often results through too wide spacing of the men. It is especially important that checks be made in such types quite frequently.

The Foreman should vary the period of the day in which he conducts crew-checks. One day, checking may be carried on the first thing in the morning; the next day, after lunch; another day, during the forenoon or the last thing at night. By thus alternating the time of checking it is believed that the foreman will secure the best average of crew efficiency.



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On the daily crew report (the B.R.1), a space is provided for reporting the crew-checks. The number of bushes pulled the first time over the ground should always be given, as well as those located on the first, second and third checks. An estimate of the area checked should also be given.

REMOVAL OF CULTIVATED RIBES: Foremen and Scouts, read carefully!

Before calling on an owner regarding the removal of his bushes, put yourself in his place and imagine how you would feel about losing your own property, and how you would want an Agent of the State to treat you.

Use tact and courtesy in approaching an owner of cultivated Ribes. Explain carefully why it is necessary to destroy his bushes. Do not make any mis-statements.



Keep your temper! Be polite!

When infected cultivated Ribes are found: Take a leaf from each bush; place it in an envelope and write the owner's name and address plainly on the outside. Keep a record on the form provided for this purpose of all owners of cultivated bushes that you pull.

If you are not successful in getting the owner to sign the Release Slip, or in securing his permission to destroy the bushes, DON'T GET IN WRONG BY FURTHER ARGUMENT. Report the case to the County Blister-Rust Agent.

Your Identification Card and copy of the State Blister Rust Law should always be with you.

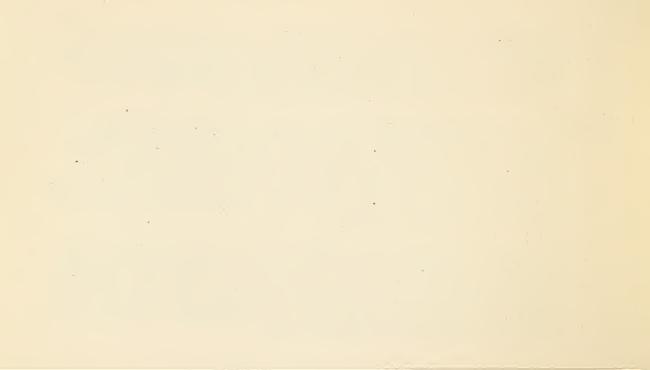


All Foremen, as well as crew members, should know that the authority for the removal of cultivated Ribes is wholly in the hands of the STATE FORESTRY DEPARTMENT. NEVER SAY that the Federal Government has any such authority.

MAPS: The Foremen are provided with copies of a map of the town in which they are working. One copy is for use in the field; another for the purpose of posting in his room, while a third may be held in reserve in case an extra map is needed.

The field map is intended for the use of a foreman in the field. He should record all pine infections found during the day, and shade in the areas covered.

The office map should be plainly posted in the foreman's room so as to be easily found by the State or County Agent whenever a visit is paid to the field headquarters. This map should be kept thoroughly up to date and clearly show all completed areas, both by the crew and scout; also the approximate location of all pine infections discovered each day.



All maps must be turned over to the County Blister-Rust Agent immediately following the completion of eradication work in a town.

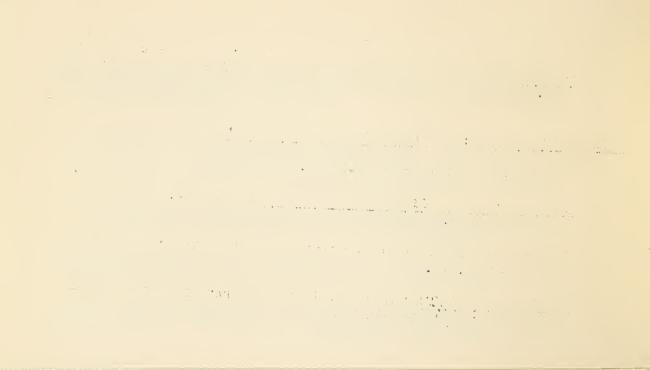
SMOKING REGULATIONS: HELP PREVENT FOREST FIRES!

Smoking is prohibited in the line.

All smoking is prohibited in the woods during hot, dry weather.

The Foreman will be held responsible for the enforcement of this rule.

IMMEDIATE DISMISSAL may result to the Foreman who fails to enforce this regulation.



DAILY RECORD OR B.R. 1: The Foreman is required to make out a daily record of the number of hours worked by himself and crew, the amount of wages due each crew member and expenses incurred. The number of wild and cultivated Ribes destroyed must also be recorded and the block numbers in which they were found clearly shown.

The Daily Record is known as a B.R. 1. Make them out neatly.

The following information must be written on the B.R. 1 each day:

- 1. Date, and name of town where work is being performed.
- 2. Block number (and owner's name if private work).
- 3. Field address of crow. (Notify office in advance, if possible of any change in address.)



- 4. Correct name of each crew member written in full:e.g. Smith, William L. Never leave a man's name off the daily report unless he has left your crew and is not expected to return.
- 5. Hours worked and wages due (See "Rainy Weather").
- 6. Character of work performed. (That is: Wild-Cultivated-Checking-Rain-etc.)
- 7. Number of Ribes pulled:
 - a. By blocks.
 - b. By varieties.
- 8. Result of daily check by crew.
- 9. Pine infections found and block number.

On Back of B. R. l. Additional information not always given daily:

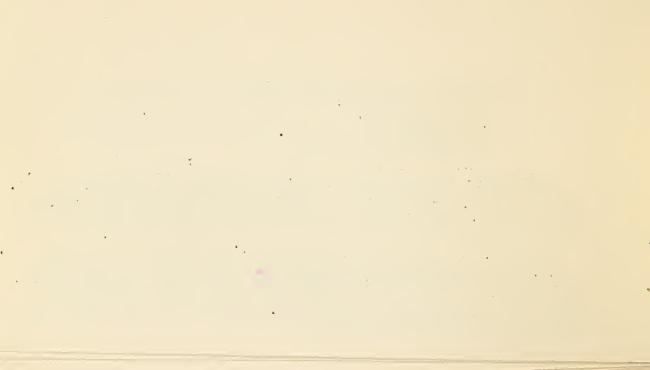
- 1. Travel expenses of new men.
- 2. Daily transportation charges of crew.
- 3. Travel expenses of crew to new town.
- 4. Correct name and home address of all new crew members.



- 51 Transfer of men to other crews.
- 6. Address to which check should be sent in case a man leaves your crew.
- 7. State whether man owes any bills. If so, the amount and name of person owed.

IMPORTANT: In case private work is conducted the same day on lands of two different owners, or upon both town and private areas, a separate B.R. 1 must be made out covering time spent on each project. Whenever recradication work is carried on the same rule applies.

The B. R. l is made out in duplicate. The original comy of the B.R. l is mailed at the end of each working day to the CONCORD OFFICE. The duplicate is mailed at the same time to the County Blister-Rust Agent. The Foreman keeps a record in his notebook of each day's work from which the B.R. l's are made up.

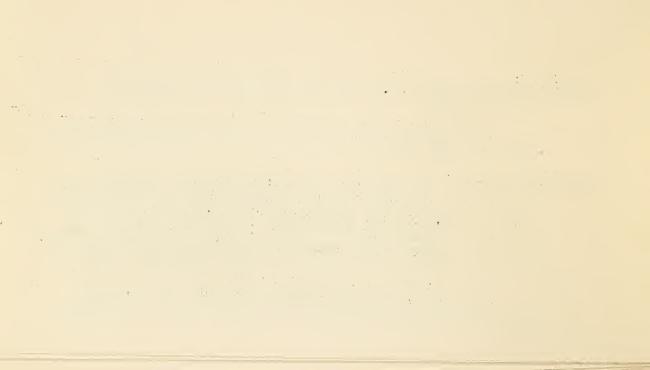


WAGES: Wages are paid every week and the time for each payroll ends Saturday night.

All increases in pay will take effect only at the beginning of a new week.

RAINY WEATHER: For all time lost on account of rain, one-half (1/2) the hourly rate will be paid; provided that the crow members remain at their field headquarters in reach of call by the Foreman. Foremen and scouts will be paid full time as they are expected to spend these hours in completing accounts and maps, or in performing such work as the County Agent may order.

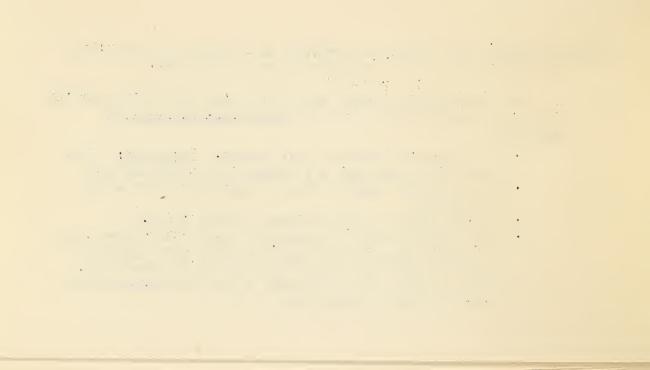
The wage scale sheet provided Foremen will indicate the wages due for fractional parts of the day, or for whole days.



EXPENSE BLANKS: The Foremen are provided with blanks for recording the expenses of each crew member as well as his own.

The County Blister-Rust Agent will show you how to properly fill in an expense blank, but the following rules must be followed:

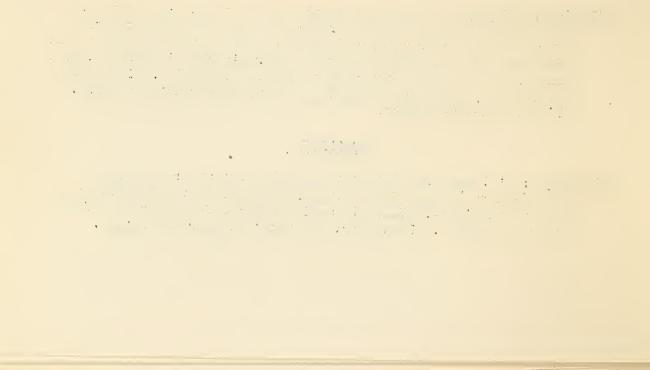
- 1. Use separate blanks for each member. Exception: Whenever Foremen may pay all transportation of his crew.
- 2. Have new crew members fill in expense account on day of arrival.
- 3. Record amount of each account on back of B.R. 1.
- 4. Mail expense blank in duplicate (white and yellow slip) to County Blister-Rust Agent's office to be approved and the third copy (blue slip) to the Concord office.
- 5. Record amount of each expense account on appropriation cards at end of working day.



APPROPRIATION CARDS: A card for keeping track of the expenditures of each project, whether town or private, must be kept by each Foreman. The crew wages and other expenses are set down on this card each day and deducted from the previous day's balance, thus showing at all times the amount of funds remaining. If properly filled out, these cards should check with your notebook, B.R. l's and expense blanks.

SUPPLIES

ENVELOPES: It is important that the envelopes that are furnished you (Federal) be used only in sending mail to the Concord office and to the Agent. There is a fine of \$300 for other use of these envelopes. Do not write any return address on them.



IDENTIFICATION CARDS: All Foremen and Scouts will be supplied with an identification card which is for use in case your authority for being on private property is questioned, or for other purposes of proper identification. This card is to be returned to the Blister-Rust Agent at the end of the season.

FIELD EQUIPMENT: Such equipment as Ribes picks, trail paper bags, burlap bags containing trail paper and other supplies not of a perishable nature must be carefully taken care of and returned to the Blister-Rust Agent at the end of the field season. The Foremen and Scouts are held responsible in case of loss or unnecessary damage to such equipment.

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CONDUCT OF CREW

DURING WORKING HOURS: The Foreman is responsible to the County

Blister-Rust Agent for the character of the work performed
by his crew. The Foreman has the authority to discharge a

crew member for poor work or failure to carry out orders.

Foremen, Scouts and crew members are expected to conduct their work in the woods in the same manner in which they would if their duties were being performed in the presence of the public.

Foremen! During the dinner hour, do not allow your crew to eat or spend the noon hour along the road, or where the public will see them.

Neither the Foreman or Scout shall leave their work to make a requested inspection of an owner's land, or for any other reason, unless authorized by the County Blister-Rust Agent.

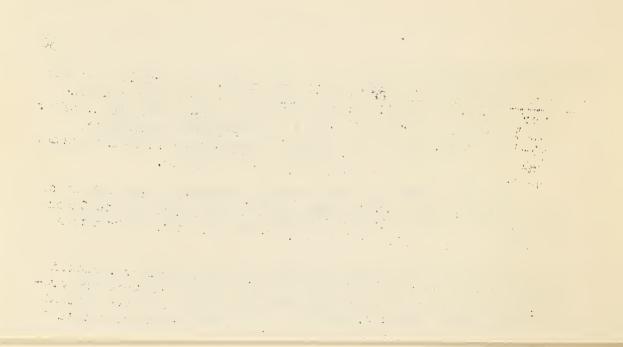
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AFTER WORKING HOURS! The public will often judge the quality of the work performed by blister-rust crews by the way the men conduct themselves around field headquarters or in the town, after working hours. In view of this it is absolutely necessary that the entire field force conduct themselves in such a manner as to leave no room for criticism by the public.

All crew Foremen and Scouts will cooperate to the best of their ability, and in the proper spirit, with the State Checkers or Federal Blister-Rust men who may visit them from time to time.

The Foremen and Scouts, as well as crew members, should remember that the funds for blister-rust control work are provided by public taxes, and therefore, the people have a right to expect exceptionally good work. It is very important that



blister-rust men carry on their duties and conduct themselves in such a manner that the townspeople will feel that good work is being done.

The cooperation of all Foremen and Scouts in making this season the most successful one in Blister-Rust Control is earnestly requested.

L. E. NEWMAN, Agent in Charge, Blister-Rust Control. • .

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